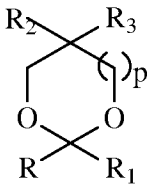
AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-123. (Canceled)

124. (New) A method for enhancing chemical digestion of a biomolecule comprising contacting the biomolecule with (i) a protease, CNBr or hydroxylamine and (ii) a surfactant represented by formula I:



(I)

in which

p is 0, 1 or 2;

R is alkyl;

R_1 and R_2 are each, independently, hydrogen or methyl; and

R_3 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,

wherein R_4 and R_5 are each, independently, lower alkyl; and

wherein the biomolecule is selected from the group consisting of a protein and a peptide, and

wherein the activity of said protease, CNBr or hydroxylamine is maintained or increased upon contact with the surfactant;

thereby enhancing the chemical digestion of said biomolecule.

125. (New) The method of claim 124, wherein the chemical digestion is enhanced by accelerating the rate of chemical digestion of said biomolecule, increasing the yield of chemical digestion of said biomolecule or increasing the completeness of chemical digestion of said biomolecule or a combination thereof.

126. (New) The method of claim 124, wherein the activity of said protease, CNBr or hydroxylamine is maintained upon contact with the surfactant.

127. (New) The method of claim 124, wherein the activity of said protease, CNBr or hydroxylamine is increased upon contact with the surfactant.

128. (New) The method of claim 126 or 127, wherein the activity of said protease, CNBr or hydroxylamine is maintained or increased relative to the activity of said protease, CNBr or hydroxylamine in the presence of a surfactant other than the surfactant of formula I.

129. (New) The method of claim 128, wherein the surfactant other than the surfactant of formula I is SDS.

130. (New) The method of claim 124, further comprising the step of analyzing the biomolecule following chemical digestion thereof.

131. (New) The method of claim 124, wherein the biomolecule is contained in a biological sample.

132. (New) The method of claim 131, wherein the biological sample is selected from the group consisting of inclusion bodies, biological fluids, biological tissues, biological matrices, embedded tissue samples, and cell culture supernatants.

133. (New) The method of claim 124, wherein the biomolecule is selected from the group consisting of a lipophilic protein, a receptor, a proteolytic protein, and a membrane-bound protein.

134. (New) The method of claim 130, wherein the step of analyzing the biomolecule comprises analysis selected from the group consisting of solid phase extraction, solid phase micro extraction, electrophoresis, mass spectrometry, liquid chromatography, liquid-liquid extraction, membrane extraction, soxhlet extraction, precipitation, clarification, electrochemical detection, staining, elemental analysis, Edmund degradation, nuclear magnetic resonance, infrared analysis, flow injection analysis, capillary electrochromatography, ultraviolet detection, and combinations thereof.

135. (New) The method of claim 134, wherein the mass spectrometry is surface desorption ionization mass spectrometry.

136. (new) The method of claim 130, wherein the surfactant is degraded prior to analysis.

137. (New) The method of claim 124, wherein the protease is immobilized.

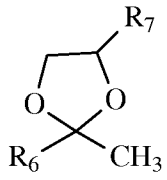
138. (New) The method of claim 124, wherein the protease is selected from the group consisting Trypsin, Chymotrypsin, Lys-C, V8 protease, AspN, Arg-C, Clostripain, Pepsin, and Papain.

139. (New) The method of claim 124, wherein the biomolecule is selected from bovine serum albumin, lysozyme, ovalbumine, myoglobin, ubiquitin, and bacteriorhodopsin.

140. (New) The method of claim 124, further comprising degrading the surfactant after the chemical digestion.

141. (New) The method of claim 140, wherein the surfactant is degraded by contact with an acidic solution.

142. (New) The method of claim 124, wherein the surfactant is represented by formula II:



(II)

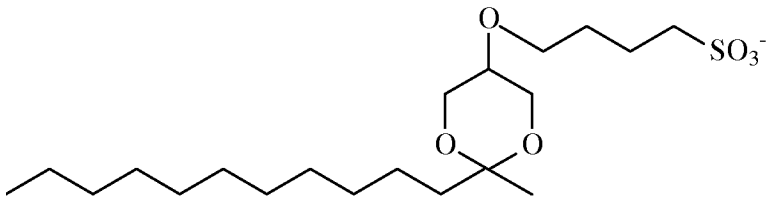
in which

R_6 is alkyl;

R_7 is selected from $-OSO_3^-$, $-R_4OSO_3^-$, $-R_4OR_5SO_3^-$, and $-OR_5SO_3^-$,

wherein R_4 and R_5 are each, independently, lower alkyl.

143. (New) The method of claim 124 wherein the surfactant has the following chemical structure:



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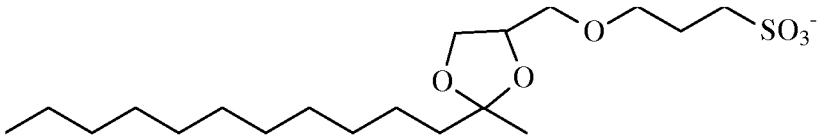
144. (New) The method of claim 124 wherein the surfactant has the following chemical structure:



145. (New) The method of claim 124 wherein increasing the activity of a protease, CNBr, or hydroxylamine facilitates on-line automation, separation, mass spectrometric analysis, or a combination thereof.

146. (New) The method of claim 124 wherein increasing the activity of a protease, CNBr, or hydroxylamine, is performed under microscale conditions.

147. (New) The method of claim 124 wherein the digestion occurs in an electrophoretic gel.

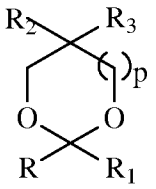
148. (New) The method of claim 124 wherein the digestion occurs in the presence one or more surfactants that are different from the surfactant in Formula I.

149. (New) The method of claim 148 wherein the digestion occurs in the presence of SDS.

150. (New) The method of claim 124 wherein the digestion occurs in the absence of SDS.

151. (New) A kit for increasing the activity of a protease, CNBr, or hydroxylamine for the chemical digestion of a biomolecule comprising:

a surfactant represented by formula I:



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wherein R_4 and R_5 are each, independently, lower alkyl; and instructions for use.